# Chapter 12
# STREET DESIGN CRITERIA

## 12.1 Overall Design Guidelines

The minimum design standards for streets and roads in the City of Knoxville are contained in the Minimum Subdivision Regulations (MSR), which are maintained by MPC as a joint set of standards for Knoxville and Knox County. Public streets and highways must be designed in accordance with the most current version of the book "A Policy on Geometric Design of Streets and Highways", published by the American Association of State and Highway Transportation Officials (AASHTO) and the geometric design standards contained in Tennessee Department of Transportation (TDOT) standard drawings and details.

Public streets and roads are grouped into seven functional classifications as specified by MSR Section 62. The Major Road Plan, maintained by MPC, shows the functional classification of all existing streets and roads. In addition, MPC also keeps a list of proposed transportation improvements as a guide for laying out new streets and roads. New streets and roads will be analyzed by MPC to determine functional classification, necessary width for right-of-way, and additional design requirements based on traffic volumes and patterns, future growth projections, or scenic/aesthetic considerations. The seven types of public streets and roads are:

1. Expressway *(MSR 62-31)*
2. Major Arterial *(MSR 62-32)*
3. Minor Arterial *(MSR 62-33)*
4. Major Collector *(MSR 62-34)*
5. Minor Collector *(MSR 62-35)*
6. Local Street *(MSR 62-36)*
7. Alley *(MSR 62-37)*

In general, most new streets and roads that are constructed as part of a development project are either collector or local streets. On occasion, a developer may be required to improve or extend a portion of an arterial street. Arterial streets and expressways are usually state routes and must be designed according to TDOT standards. Therefore, this chapter will focus mainly on the design of collector and local streets for subdivisions, using the MSR as the principal reference.

Alleys, designed on a case-by-case basis as either one-way or two-way, are considered to be a secondary means of access to the back or side of a property that has principal access elsewhere. A typical use of an alley is to provide access to the back of a building for delivery trucks, or as a route to install or maintain public utility infrastructure. Alleys are not intended for use in new subdivisions, but are most commonly found in older historic neighborhoods. Section 17-243 of the City Code recommends that one-way alleys should run east-to-west or north-to-south, unless the Engineering Department rules that a different direction is more appropriate or safer.

In addition to the seven types of public streets, the developer may choose to construct a joint permanent easement (JPE) which functions as a private street. If it serves or is adjacent to more than 5 lots, then the JPE actually receives an official street name and must satisfy most of the design requirements for a public street. However, the City of Knoxville will <u>not</u> accept the JPE for public ownership, and a homeowners association or other legal entity must accept responsibility to maintain and repair a JPE to the satisfaction of MPC and the City of Knoxville.

## 12.2 Acceptance as Public Streets

The City of Knoxville will only accept streets into the public street system that are constructed to city standards for the actual functional classification (as specified in Section 12.1). Private roads must be designed and constructed to JPE standards as specified in the Minimum Subdivision Regulations. Even if a private road is constructed to JPE standards, however, it will be very difficult for the private road to be accepted as a public street at a later time.

When a public street is accepted, it is then maintained by the City of Knoxville. Private roads must be maintained by the property owners served by the private road, or another legal entity which has been assigned responsibility at the time of design and construction. The city government is often asked to take over and maintain private roads. However, the type of problems and considerable expenses involved for the property owners to process these requests usually makes it impractical for a private road to be upgraded to the standards of a city public street. Consequently, most requests for the City Engineering Department to accept a private road are usually dropped and not pursued further. The following three basic requirements are necessary to approve a private road as a public street.

1. <u>Right-of-Way Dedication</u>

   The right-of-way to be dedicated must comply with the Major Road Plan as maintained by MPC. Within the City of Knoxville, the minimum right-of-way width for local streets is 50 feet. Private roads almost always have right-of-way widths less than 50 feet. In many of these cases, additional right-of-way cannot be dedicated without encroaching on buildings, sheds, trees, utilities, drainage structures or other improvements.

2. <u>Acceptable Roadway Construction</u>

   The property owners must submit proof to the City Engineering Department that the current pavement section is constructed to public road standards. Even if the existing private road meets the pavement thickness standards, additional construction will usually be necessary to increase the pavement width. The pavement investigation and proposed roadway improvements must be analyzed and designed by a qualified professional engineer registered in the state of Tennessee, with adequate education and experience to conduct this type of work.

3. <u>New Survey Plat</u>

   A new property survey reflecting the new public right-of-way, and all changes to the affected properties, must be approved by the Metropolitan Planning Commission and recorded with the Knox County Register of Deeds. The new survey plat must be prepared by a registered land surveyor currently licensed to practice in the state of Tennessee. Within subdivisions, the entire subdivision unit must be included on the plat. When the right-of-way to be dedicated must be widened to 50 feet, property boundaries and lot areas are affected. New easements are generally required. New variances may be needed for minimum lot areas, setbacks, zoning, etc. Each property owner must sign a "Certificate of

Ownership and General Dedication" statement and have his signature notarized on the survey plat.

## 12.3 Horizontal Geometry

Horizontal geometry requirements for city streets and roads are described in MSR Section 62 and summarized in Table 12-1 for the seven functional classifications. In addition, MSR Section 62 contains criteria for designing cul-de-sacs, intersection spacing, vertical grades, etc. For Table 12-1, the minimum allowable horizontal radius for local streets depends on whether the local street has a total length of 1000 feet or greater. <u>The minimum design speed for local streets in residential subdivisions is 30 miles per hour</u> or as designated by the Engineering Director (see Section 22.5-35 of the Knoxville Stormwater and Street Ordinance).

Minimum right-of-way widths are specified in order to accommodate future road improvements, sidewalks, utility installation, streetlights, bicycle trails, greenways, etc. As a brief summary of horizontal curve design, the following equations are listed:

$\Delta$ = Deflection angle (degrees)

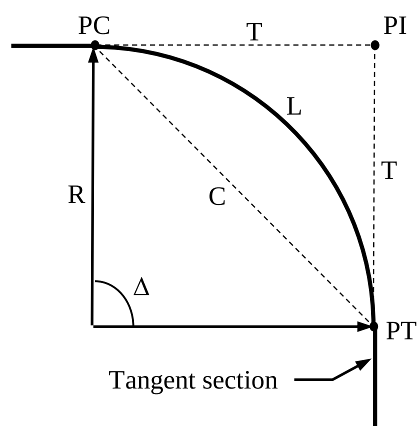
R = Centerline radius, or radius of curvature (feet)

L = Length of curve (feet) = $\Delta$ (R) ($2\pi$ / 360º)

D = Degree of curve (degrees) = 5729.58 / R

T = Tangent of curve (feet) = R tan ($\Delta$)

C = Chord, or long chord (feet) = 2 R sin ($\Delta$/2)




Horizontal curve information is required in order for the Stormwater Engineering Division to review and approve site development plans. For new public streets and roads, separate roadway drawings must be submitted in a standardized format that can be easily reproduced in various formats for city and county records. In many cases, it is customary to measure the length of centerline in units of 100 feet, called stations. Also, the following points are usually represented and labeled on roadway drawings:

PC = point of curvature (the beginning of a curve)
PI = point of intersection (where two tangent sections would meet, if extended)
PT = point of tangency (the end of a curve)

Additional requirements for horizontal design include:

- (MSR 62-81) Streets within a subdivision shall usually have 90º intersections whenever possible. The minimum intersection angle is 60º for cases where topography imposes a severe restraint, and very few traffic movements are expected in the direction of the acute angle turn.
- (MSR 62-84) Minimum radius for a curb or the edge of pavement, at the corner of a property with residential or agricultural zoning, shall be 25 feet for angles of 90º or less. Minimum radius of a curb shall be 75 feet for angles greater than 90º.

- (MSR 62-85) Minimum radius for a curb or the edge of pavement, at the corner of a property with office, commercial or industrial zoning, shall be 75 feet for all angles between 60º and 120º.

**Table 12-1**

**Horizontal Geometry for Streets**

| **Functional Classification** | | Minimum ROW width | Minimum pavement width | Minimum centerline radius | Minimum length for tangents - reverse curve | Minimum length for tangents - broken back curve | Minimum intersection spacing |
|---|---|---|---|---|---|---|---|
| *Section from MSR:* | | *62-40* | *62-50* | *62-70* | *62-73* | *62-74* | |
| Expressway | | * | * | * | * | * | * |
| Major Arterial | | * | * | 920' | 150' | * | 400' |
| Minor Arterial | | * | * | 920' | 150' | * | 400' |
| Major Collector | | * | * | 560' | 100' | 175' | 300' |
| Minor Collector | | 70' | 32' | 400' | 75' | 175' | 300' |
| Local Street | L > | 50' | 26' | 250' | 50' | 150' | 125' |
| | L < | 50' | 26' | 100' | 50' | 150' | 125' |
| Alley | | ** | ** | ** | ** | ** | --- |

* - Consult Major Road Plan, MPC growth planning studies, City Engineering Dept and TDOT.
** - Designed on a case-by-case basis.

## 12.4 Vertical Geometry

Vertical geometry requirements for city streets and roads are described in MSR Section 62 and summarized in Table 12-2 for the seven functional classifications. The major concerns for vertical geometry are ensuring adequate sight distance, reasonable grades for accelerating and decelerating, and relatively flat grades at intersections for stopping and turning. Vertical geometry is based on parabolic curves rather than circular curves. The following equations are listed as a brief summary of vertical geometry.

LVC = Length of vertical curve (stations)

$G_1$ = Approach grade (percent)

$G_2$ = Exit grade (percent)

A = Rate of change (percent per station) = $(G_2 - G_1) / LVC$

E = External of vertical curve = $0.125 (LVC) (G_2 - G_1)$

$Y = (A/2) X^2 + G_1 X + \text{Elevation of PVC}$

$Y_{MAX}$ or $Y_{MIN}$ occurs when: $X = G_1 / A$

$K = (100\ LVC) / A$

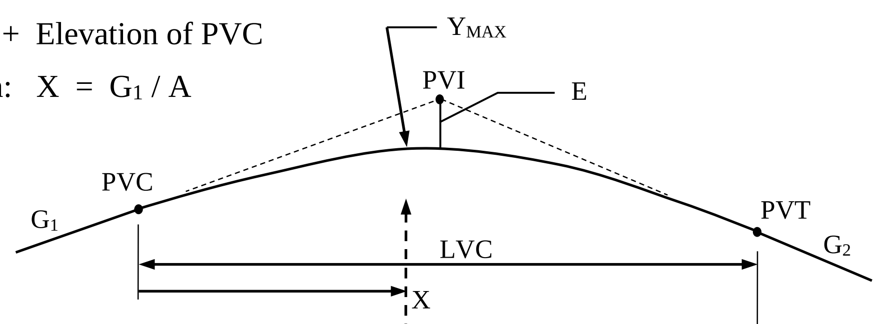


**Table 12-2**
**Vertical Geometry for Streets**

| **Functional Classification** | Maximum grade | Minimum grade | Minimum K for vertical curves | Typical cross slopes |
|---|---|---|---|---|
| *Section from MSR:* | *62-60* | ----- | *62-72* | ----- |
| Expressway | 5% | 1% | * | * |
| Major Arterial | 6% | 1% | 50 | * |
| Minor Arterial | 6% | 1% | 50 | * |
| Major Collector | 8% | 1% | 50 | 2% |
| Minor Collector | 10% | 1% | 50 | 2% |
| Local Street | 12% # | 1% | 25 # | 2% |
| Alley | ** | ** | ** | ** |

* - Consult Major Road Plan, MPC studies, City Engineering Dept and TDOT.
** - Designed on a case-by-case basis.
\# - MPC and Stormwater Engineering Division may recommend approval for variance up to 15% on local streets.

Collector streets and local streets should be designed with a crown section of 2% cross slope. In other words, each half of the street should drain towards the curb and gutter without crossing the centerline of the street. This necessitates that a storm drainage system must be designed to drain both sides of the street, with careful attention to street intersections.

Superelevation of a minor collector street or a local street for a subdivision is seldom necessary. The tradeoff of achieving higher design speeds (through the use of superelevation) is usually not worth the design problems of ensuring adequate drainage on each side of the street, particularly if there are many entrances and driveways along the street. In addition, the use of superelevation on local streets may encourage faster driving through residential neighborhoods. However, the design engineer should be prepared to properly design any street superelevations when requested by MPC or Stormwater Engineering Division. Superelevation standards can be found in both the AASHTO design policy ("Green Book") and on TDOT standard detail drawings.

A local street must have a minimum tangent grade of 50' length when tying into another street. The tangent grade should preferably be 1% with a maximum value up to 2%. The minimum tangent grade is measured from the closest edge of travelway of the intersected road. Vertical street geometry must be coordinated with horizontal street geometry in order to ensure adequate sight distances as described in Section 12.5. Broken-back vertical curves and compound vertical curves should be avoided.

## 12.5 Sight Distance

Sight distance is an essential safety element in the design of streets, roads, driveways and entrances. The entire process of driving relies on a combination of adequate vision and lighting, driver reactions, easily recognizable situations, and standard traffic signs and signals. While there are equations and formulas for computing both horizontal and vertical sight distances, it is usually difficult to quantify and measure these values if a horizontal roadway curve and vertical roadway curve occur at the same location. Horizontal curves and vertical curves should be separated whenever possible. An example of bad street design is if a horizontal curve begins or ends near the crest of a vertical curve (so that the driver does not see the change in alignment).

Each driveway, entrance, and intersecting street must be checked by the design engineer to ensure that the driver of the stopped vehicle (typically several feet from the front or back bumper) can adequately see both ways. Each check can be done by formulas and equations, by drawing horizontal sight distances on the plan drawings, or by carefully visualizing a driveway or entrance. The use of 3-dimensional CADD software for street design is now commonplace; this will also assist the design engineer in verifying sight distances.

Horizontal sight distance for street design is usually satisfied by the minimum centerline radius for each functional street classification (shown in Table 12-1), provided that standard building setbacks and right-of-way clearances are followed. However, there are many other things that may interfere with horizontal sight distance such as: cut slopes, trees, tall grass, signs, billboards, parked cars, retaining walls, fences, or bridge overpasses.

Vertical sight distance is usually satisfied by the minimum K values found in Table 12-2 for each functional street classification. Vertical sight distance is actually two categories: stopping sight distance and passing sight distance. Passing sight distance, which is the distance needed to overtake and pass a vehicle headed in the same direction, is usually not applicable on urban streets since:

- Most vehicles do not achieve "highway speeds" on city streets.
- Alternate routes are more commonly available within the city for impatient drivers.
- Within the city limits, a slower vehicle may turn left at almost any driveway or street.

Stopping sight distance is shown in Table 12-3 for various travel speeds and assuming wet pavement conditions. Stopping distance is shorter when traveling uphill and longer when traveling downhill. The design engineer must coordinate all elements of street and roadway design during design, and conduct a thorough review after design is completed. Geometric design must be coordinated with grading and earthwork. Drainage design must be compatible with the geometric design. Some basic rules for coordinating geometric design include:

- Avoid a horizontal curve at the crest of a vertical curve.
- Avoid a horizontal curve at the bottom of a long vertical grade.
- Do not make an uncomfortable vertical profile by using a series of up-and-down curves.
- Do not use compound vertical curves or short tangent sections between vertical curves.
- Avoid a vertical curve at the beginning or end of a horizontal curve.

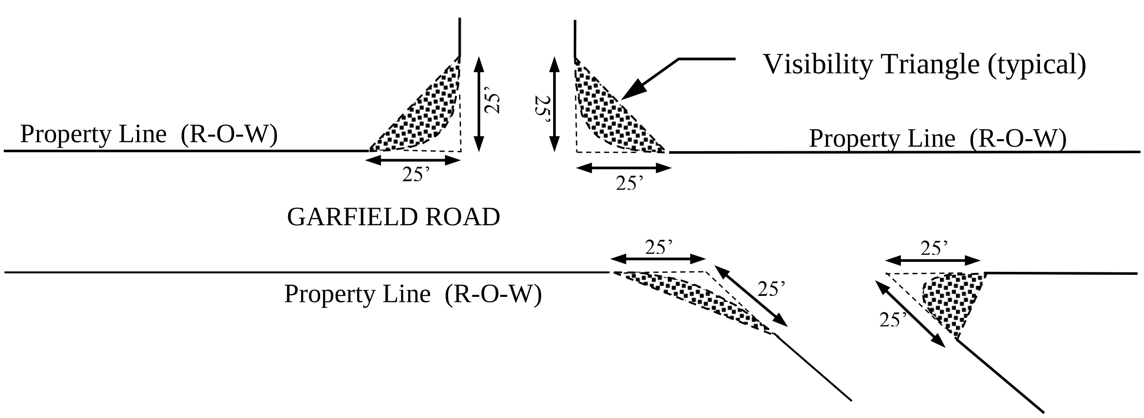
**Table 12-3**
**Stopping Sight Distance**
*(f = wet pavement friction value)*
*Taken from "A Policy on Geometric Design of Highways and Streets" (AASHTO)*

| Actual Travel Speed | Reaction Distance * | F | Braking Distance on Level Ground ** | Stopping Sight Distance on Level Ground | | Stopping Sight Distance for Uphill Grades | | Stopping Sight Distance for Downhill Grades | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Computed | Typical Rounded Values | Computed | | Computed | |
| | | | | | | +5% | +10% | -5% | -10% |
| mph | feet | --- | feet | feet | feet | feet | feet | feet | feet |
| 20 | 73 | 0. | 33 | 107 | 125 | 103 | 100 | 112 | 118 |
| 25 | 92 | 0. | 55 | 147 | 150 | 140 | 135 | 155 | 166 |
| 30 | 110 | 0. | 86 | 196 | 200 | 185 | 177 | 210 | 230 |
| 35 | 128 | 0. | 120 | 248 | 250 | 233 | 221 | 269 | 299 |
| 40 | 147 | 0. | 167 | 313 | 325 | 291 | 274 | 345 | 389 |
| 45 | 165 | 0. | 218 | 383 | 400 | 353 | 330 | 425 | 487 |
| 50 | 183 | 0. | 278 | 461 | 475 | 422 | 392 | 517 | 600 |
| 55 | 202 | 0. | 336 | 538 | 550 | 490 | 454 | 605 | 706 |
| 60 | 220 | 0. | 414 | 634 | 650 | 573 | 528 | 721 | 852 |
| 70 | 257 | 0. | 584 | 840 | 850 | 752 | 687 | 967 | 1165 |

* - Reaction distance is based on 2.5 seconds to recognize and react to a stopping situation.
** - Braking distance is based on the equation $D = V^2 / 30 (F \pm G)$

D = braking distance (feet)
V = travel speed (mph)
F = coefficient of friction
G = longitudinal grade of roadway (feet/feet)

The following diagram illustrates the "Visibility Triangle", a further requirement for sight distance that is in the City of Knoxville Zoning Ordinance, Article V, Section 6(C). On any corner lot where front and side yards are required, there shall be no wall, fence, sign, structure, plant growth or any object, whether movable or stationary, which obstructs the vision at elevations between 2 ½ feet and 10 feet above the crown of the adjacent roadway within the "Visibility Triangle".



On any property which is required to have a front yard (except for the corner lot as described with the Visibility Triangle), there shall be no fence, wall, hedge or yard ornament that materially impedes vision across the front yard above the height of 3 ½ feet, in accordance with in the City of Knoxville Zoning Ordinance, Article V, Section 6(C).

## 12.6 Pavement Sections

Concrete curb shall generally be 6" high, with or without integral concrete gutters. In most cases, integral curb and gutter sections shall have a total width of 30" consisting of a 24" gutter, unless a different type of curb has been used in the immediate vicinity of the project. Traversable curb and gutter may be appropriate in some locations such as residential subdivisions. New residential subdivision streets may be constructed with standard extruded curbing with the approval of the Engineering Department. The aggregate base must extend at least 2 feet beyond the back of curb, in order to ensure an adequate foundation for the curb and gutter.

**Asphalt Pavement**

| | Aggr. base | Binder | Leveling | Surface |
|---|---|---|---|---|
| Local street | 8" | 2.5" | ----- | 1.5" |
| Collector street | 10" | 3" | ----- | 2" |
| Arterial street | 12" | 3" | 1.5" | 1.5" |
| Industrial / Commercial | 14" | 3.5" | 2" | 1.5" |

**Concrete Pavement**

| | Aggr. base | Surface |
|---|---|---|
| Local street | 4" | 5" |
| Collector street | 4" | 6" |
| Arterial street | 4" | 8" |
| Industrial / commercial | 4" | 9" |

Asphalt and concrete pavement materials must be tested to ensure adequate strength properties and proper density (as specified in the Knoxville Technical Specifications).

| Material | Gradation | Knoxville Technical Specifications |
|---|---|---|
| Mineral aggregate base | Class A Grade D crushed stone | TS-05 (TDOT 903.05) |
| Binder asphalt course | Grading B asphalt | TS-09 |
| Leveling asphalt course | Grading C asphalt | TS-09 |
| Surface asphalt course | Grading D asphalt | TS-10 |
| Surface concrete pavement | 3500 psi 28-day compr. strength | TS-11 |
| Prime coat and tack coat | Emulsified or cut-back asphalt | TS-06 and TS-07 |

## 12.7 Traffic Considerations

MPC maintains the Major Road Plan to ensure that traffic and street improvements will benefit the overall community. MPC coordinates review of conceptual and preliminary plans with many agencies, such as the Knoxville Police and Fire Departments, so that changes to traffic or street patterns will not adversely affect emergency response services. As part of the regional program called "Nine Counties - One Vision", MPC is also involved in conceptual planning for alternative forms of transportation (bus, transit, bicycles, pedestrians). The Knoxville Regional Transportation Planning Organization (TPO) serves the areas covered by Knox County and Blount County to analyze regional transportation planning. See the following websites for additional information:

http://www.knoxmpc.org/ Metropolitan Planning Commission (MPC)

http://www.knoxtrans.org/ Knoxville Transportation Planning Organization (TPO)

http://www.ninecountiesonevision.org/ Nine Counties - One Vision

http://www.knoxmpc.org/locldata/stats.htm Traffic counts, travel analyses, commuter patterns

The Knoxville Zoning Ordinance defines a major traffic generator as a facility that is required to have 400 or more parking spaces. The number and type of parking spaces are described in Article V, Section 7 (Minimum offstreet parking, access and driveway requirements). Any development projects which qualify as a major traffic generator shall submit a traffic study report as described in Policy 01 in Appendix C. Driveways and entrances shall meet the requirements of Policy 01 (Access Control for Traffic and Driveways).

## 12.8 Traffic Signs

The developer/contractor is required to correctly install all traffic signs necessary for the safe and effective control of traffic. The site development plans must include the types and locations of each sign, standard detail or reference, mounting height, and orientation. The primary reference for traffic signs and markings is the Manual on Uniform Traffic Control Devices (MUTCD), with a particular emphasis on regulatory signs (such as Stop signs, R1-1, and One-Way signs, R6-1) and warning signs (such as No Outlet signs, W14-1). See the City of Knoxville Technical Specification TS-63 (on the Civil Engineering Division webpage) for traffic sign installation and materials, or consult TDOT Standard Specifications Section 916 for installation and materials.

The developer/contractor may contact the City Sign Shop (Traffic Engineering Division) in order to purchase traffic signs and installation hardware. Or alternatively, the developer/contractor may arrange for the City Sign Shop to install traffic signs at a reasonable cost.

Temporary traffic signs and temporary pavement markings, if necessary during construction, must meet the requirements that are listed in City of Knoxville Technical Specification TS-34. *A Construction ROW Permit* and a *Temporary Traffic Control Permit* must be obtained from the Civil Engineering Division for work that occurs within the street right-of-way.

## 12.9 Coordination With Utilities

Installation of utilities must be carefully coordinated with all aspects of site construction, and especially street construction. New streets and rights-of-way are required to have a utility strip outside of the pavement section, so that routine utility installation and repair does not impact the pavement structure and traffic. Utilities should be installed underground whenever possible (such as telephone and electric). Requirements for utility plans are described in MSR Section 43-75. MSR Section 69-10 requires that the interior and exterior lot lines of a subdivided property shall have a standard 10' wide utility/drainage easement. Interior easements shall be centered on interior property lines, so that the width will be 5' on each side of the property line.

The locations, sizes, and capacities of utility lines and appurtenances must be shown on the plan drawings in order to minimize utility conflicts, coordinate construction work, arrange for the proper easements, and to ensure adequate materials. Appurtenances such as valves, fire hydrants, manholes, cleanouts, and pump stations must be located in areas that are easily accessible and identifiable. Utility easements must be labeled with accurate dimensions and locations. Sanitary sewer lines must include a profile showing invert elevations and connections. All excavations should be coordinated with "Tennessee One Call" (1-800-351-1111) at least 2 working days prior to digging.

The design engineer should carefully examine the proposed layout of utilities to avoid interferences. Electrical and water connections may be needed for outdoor applications. Electrical connections are required for streetlights, traffic signals, signs or security lights. Water may be needed for lawn irrigation sprinklers, fountains, or landscaped waterfalls/ponds. KUB looks at utility plans as part of the building permit review and not during grading permit review.

Any excavation, tree trimming, construction or installation within public right-of-way must follow the Utility Maintenance & Construction Policy, which is available on the Civil Engineering Division webpage. A *Construction ROW Permit* must be obtained at least 48 hours in advance of the construction activity; a *Temporary Traffic Control Permit* may also be needed. A copy of the ROW Construction Permit is included in Appendix A.

## 12.10 Streetlights

Streetlights are necessary to improve public safety for pedestrians and vehicles. The City of Knoxville pays for the installation and maintenance of streetlights, but the developer is required to show approximate locations and type of streetlight on the site development plans for city approval. Maximum streetlight spacing on local streets and within subdivisions is typically 200 feet, with a typical height in residential areas of 14 to 35 feet. Streetlights should be located at intersections in such a manner to illuminate intersections, stop signs and curves.

Design and installation of streetlights is performed by KUB (or another utility district if appropriate) and must be coordinated with the Stormwater Engineering Division. Streetlights are often specified with underground electric connections for subdivisions, and a developer has several choices of decorative fixtures and poles that can be selected. Or streetlights may be mounted on existing electrical poles. High-pressure sodium lights are required on city streets due to energy efficiency and ease of maintenance.

Pictures and designs of decorative streetlights can be viewed at the KUB offices or the Stormwater Engineering Division offices. Other streetlight types may be selected if any additional installation/construction costs are borne by the developer. Typical information for streetlight design includes:

1. Horizontal and vertical geometry of the street centerline, including curve data.
2. Typical cross section of the street that shows the proposed streetlight (pole and luminaire) with respect to the edge of pavement, curb and sidewalk.
3. Character and spacing of existing streetlights on nearby streets and throughout the neighborhood.
4. Locations of the proposed streetlights, with average spacing computations.
5. Mounting height, foundation/base, and type of pole.
6. Luminaire size, ASA type, and initial lumen rating (with photometric design data).
7. Average horizontal footcandle level (with minimum and maximum values also noted).

Streetlight poles shall not be located closer than 2 feet to the face of curb, or closer than 4 feet to the edge of pavement. Do not locate streetlight poles at locations with a high potential for collisions. Typically streetlight poles may be metal, fiberglass, concrete or wood poles with a luminaire mounting height between 10 feet and 18 feet. Poles will have a handhole for access to wiring. Poles may be direct burial (4 ft butt) or designed with a flange base for mounting on a concrete foundation.

All installations shall conform to the requirements of the latest edition of the National Electrical Code (NEC), the Illuminating Engineering Society standards, and the rules of the Knoxville Utilities Board (KUB). Customers shall notify "Tennessee One Call" (1-800-351-1111) prior to any excavation for the proposed streetlight installation.

## 12.11 Standard Details and Technical Specifications

The use of standard details and specifications is encouraged in order to promote a safe level of performance for all structures and roadways. The Civil Engineering Division maintains standard details to be used for construction projects within the City of Knoxville; see the Civil Engineering Division webpage. An excellent source of standard details are the TDOT Standard Roadway and Structure Drawings, which can be puchased from TDOT headquarters in Nashville (approximate cost $100) or downloaded from the TDOT website described in Chapter 3.

The minimum properties and methods of street construction must match the latest version of the City of Knoxville technical specifications. The Civil Engineering Division maintains the Knoxville standard specifications for use with all city construction projects, which can be downloaded from the Civil Engineering Division webpage. The City of Knoxville technical specifications are not meant to cover every situation or design need, but they address general requirements for which additional drawings, specifications, details, plans and cross sections must be prepared and stamped by a design professional engineer registered in the state of Tennessee.